I CLAIM:

1. An internal combustion engine comprising:

a housing forming a compartment with opposed cylinders at opposite ends of the compartment;

a slide body reciprocal in the housing compartment, the slide body having pistons at opposite ends of the slide body, individual pistons being received within individual cylinders, cyclical combustion within the cylinders imparting linear reciprocal motion to the slide body;

a rotating disk positioned in the housing compartment, the rotating disk being located adjacent to the slide body and being rotatable about an axis generally perpendicular to linear reciprocal movement of the slide body;

interengaging members on the slide body and rotating disk sufficiently laterally offset from the axis of rotation of the rotating disk to impart rotary motion to the rotating disk as the slide body linearly reciprocates within the housing compartment: and

a drive shaft extending through the housing, rotation of the rotating disk being transmitted to the drive shaft so that linear motion of the slide piston is transmitted through the rotating disk to the drive shaft for delivering external power.

2. The internal combustion engine of claim 1 wherein the slide body and the pistons comprise a rigid body.

3. The internal combustion engine of claim 2 wherein the slide body and the pistons comprise a one-piece body.

4. The internal combustion engine of claim 2 wherein multiple pistons are located on each end of the slide body, multiple pistons on each end of the slide body extending into side by side cylinders on each end of the housing.

5. The internal combustion engine of claim 2 wherein the pistons and the slide body move only linearly, relative to the cylinders, without angular motion relative to the cylinders.

6. The internal combustion engine of claim 1 wherein the rotating disk comprises a flywheel.

7. The internal combustion engine of claim 1 wherein the housing comprises a shroud, a top cover plate, a bottom cover plate and two side plates interlocked by tongue and groove configurations and held together by clamps.

8. The internal combustion engine of cliam 1 wehrein the interengaging members comprise a pin received within a track.

9. The internal combustion engine of claim 8 wherein the pin extends from a rotating disk ito the track located adjacent to the axis of rotation of the rotating disk.

10 The internal combustion engine of claim 1 wherein a lubricating media is disposed within the compartment to lubricate at least portions of the slide body, the rotating disk and the interengaging members.

11. The internal combustion engine of claim 1 wherein linear bearings are disposed between side edges of the slide body and adjacent surfaces of the housing.

12. An internal combustion engine comprising:

reciprocal pistons engaging a rotary member to transfer linear motion of the pistons to rotary motion, the pistons being mounted in a housing further comprising housing components including;

an upper cover and a separate lower cover;

side plates attachable to and detachable from the upper cover and the lower cover adjacent opposite edges thereof to form a central housing subassembly having a generally rectangular cross section;

a cylinder body attached to and detachable from one end of the central housing subassembly, the cylinder body including cylinders receiving the reciprocal pistons,

a head attachable to and detachable from the cylinder body and enclosing one end of the cylinders;

valves mounted on the head; and

valve actuation means;

whereby the internal combustion engine can be assembled and disassembled by respectively attaching and detaching the housing components in surrounding relationship to the reciprocal pistons and the rotary member.

13. The internal combustion engine of claim 12 wherein the reciprocal pistons are fixed to a slide body, the pistons and the slide body moving only linearly, without rotary motion relative to the cylinders.

14. The internal combustion engine of claim 13 wherein the rotary member comprises a flywheel also located in the housing.

15. The internal combustion engine of claim 12 wherein coolant is circulated through the side plates and around the cylinder body and head.

16. The internal combustion engine of claim 12 wherein oil is dispersed in an internal compartment bounded by the upper cover, the lower cover and the side plates.

17. A piston subassembly for use in an internal combustion engine, the piston subassembly comprising:

a central body including an arm extending from two opposite ends of the central body;

a cylindrical piston on a distal end of each arm, the central body, the arms and the cylindrical pistons comprising a rigid body such that as the piston subassembly moves through a complete cycle, without relative angular movement of the cylindrical pistons, the arms and the central body; and

an engagement surface on the central body comprising means for engaging a separate member during linear movement of the piston subassembly to impart rotary movement to the separate member to output energy due to combustion in the internal combustion engine.

18. The piston subassembly of claim 17 wherein the central body, the arms and the cylindrical pistons comprise sections of a one-piece member.

19. The piston subassembly of claim 18 wherein the piston subassembly comprises a one-piece cast member.

20. The piston subassembly of claim 17 wherein the central body has a generally rectangular configuration with a width greater than the arms and has opposed, at least partially planar, parallel faces.

21. The piston subassembly of claim 17 wherein a plurality of side by side cylindrical pistons are located on opposite ends of the central body.

22. The piston subassembly of claim 17 wherein the engagement surface comprises a track extending at an acute angle relative to the linear movement of the piston subassembly.

23. The piston subassembly of claim 22 wherein the track is positioned in a cavity in the central body, the track being formed of a material having a greater wear resistance than the material from which the central body is formed.

24. The piston subassembly of claim 17 including linear bearings extending in the direction of movement of the piston subassembly.

25. An internal combustion engine including a plurality of linearly reciprocal pistons, all of the pistons moving in the same direction during each stroke, and a flywheel having an axis of rotation substantially perpendicular to the direction in

which the pistons move, the flywheel having sufficient angular momentum to dampen reaction forces acting in a direction opposite from the direction of movement of the pistons during sequential strokes due to the expansion of a combustible fuel-air mixture sequentially acting on individual pistons so that the internal combustion engine can be employed in a mobile vehicle.

26. The internal combustion engine of claim 25 in which the flywheel is connected to the pistons.

27. The internal combustion engine of claim 25 in which the flywheel also comprises means for reducing fluctuations in piston velocity during each stroke.

28. The internal combustion engine of claim 25 in which multiple pistons are rigidly connected to each other.

29. The internal combustion engine of claim 25 wherein the flywheel is located in a plane parallel to and adjacent to a central portion of the one-piece member, the pistons extending in opposite directions from the one-piece member.

30. The internal combustion engine of claim 25 wherein portions of the pistons overlay the flywheel beyond the periphery of the flywheel to reduce a moment arm between resultant forces acting on the pistons due to combustion and the center of mass of the flywheel.

31. A gear bearing assembly for use between a powered first member reciprocal linearly relative to and adjacent to a stationary second member, the gear bearing assembly comprising:

a plurality of gear bearings, each gear bearing having an upper and a lower conical surface, with a series of gear teeth circumferentially disposed between the upper and lower conical surfaces;

linear gears oppositely disposed on the first and second members, the gear teeth on each gear bearing engaging the linear gears: and

inclined surfaces extending above and below the linear gears, the conical surfaces on the gear bearings being juxtaposed to the inclined surfaces as the gear bearings rotate relative to the first and second members;

wherein the gear bearings remain spaced by a substantially constant distance as the first member reciprocates linearly relative to the second member to counteract bureau drawer effects between the first and second members.

32. The gear bearing assembly of claim 31 wherein the conical surfaces are spaced from the inclined surfaces by a lubricating material during operation of the gear bearing assembly.

33. A valve actuation mechanism for use in an engine comprising:

rotating gears including protruding cam surfaces on the gears positioned to open and close the valves as the gears rotate;

a valve cam shaft rotating in response to movement of pistons;

a drive gear on the valve cam shaft engaging the rotating gears to cause the protruding cam surface to open and close the valves as the valve cam shaft rotates during cyclical movement of the pistons.

34. The valve actuation mechanism of claim 33 wherein the valve cam shaft includes a peripheral groove engagable with a protrusion moving along the groove during cyclical movement of the pistons.

35. The valve actuation mechanism of claim 34 wherein the peripheral groove extends around the valve cam shaft through a closed path.

36. The valve actuation mechanism of claim 35 wherein each piston moves linearly and the protrusion extends transversely relative to a direction in which the pistons move, the valve cam shaft extending parallel to the direction in which the pistons move.

37. The valve actuation mechanism of claim 33 wherein interconnected pistons face in opposite directions and move linearly in unison and the rotating gears are positioned on opposite ends of the engine beyond the pistons with the valve cam shaft extending parallel to the direction of movement of the pistons and between the rotating gears.

38. The valve actuation mechanism of claim 37 wherein the cam surfaces are located on interior faces of the rotating gears.

39. The valve actuation mechanism of claim 33 wherein a secondary shaft extends parallel to the valve cam shaft, each shaft including a peripheral groove, the peripheral groove in the valve cam shaft extending around the valve cam shaft and the peripheral groove in the secondary shaft extending only partially around the secondary shaft, with two side by side protrusions extending transverse to the pistons engaging respective peripheral grooves, the secondary shaft engaging the valve cam shaft as the direction of relative movement of the protrusions relative to the valve cam shaft changes resulting in constant rotaton of thevalve cam shaft.

40. The valve actuation mechanism of claim 33 wherein a bevel gear is mounted on the valve cam shaft, the bevel gear engaging a drive bevel gear rotating in response to linear movement of the pistons.

41. The valve actuation mechanism of claim 33 wherein opposed bevel gears are spaced apart on the valve cam shaft, the opposed bevel gears engaging a drive bevel gear positioned therebetween and rotating in opposite directions in response to linear movement of the pistons, each opposed bevel gear being mounted on clutch bearings so that the drive bevel gear can impart rotation to the valve cam shaft in only a single direction.

42. The valve actuation mechanism of claim 33 wherein a protrusion on a slide body from which the pistons extend fits within a peripheral groove on the valve cam shaft to rotate the valve cam shaft in response to linear movement of the slide body and the pistons extending therefrom.

43. The valve acutation mechanism of claim 33 wherein each rotating gear can be separately removed from the valve cam shaft for repair, alignment or replacement.

44. A four stroke internal combustion engine including a piston subassembly movable in opposite directions on each successive stroke, the piston subassembly comprising a slide body with an even number of at least six pistons, with an equal number of pistons on opposite ends of the slide body and with pistons on opposite ends of the slide body facing in opposite directions, combustion occurring in a sequence such that the resultant force acting on pistons during each stroke is parallel to the direction of movement of the piston subassembly such that the piston subassembly does not bind during any stroke due to the absence of any resultant rotary movement of the piston subassembly.

45. The four stroke internal combustion engine of claim 44 in which combustion simultaneously energizes at least two pistons on the same end of the piston subassembly at the beginning of at least one stroke.

46. The four stroke internal combustion engine of claim 44 wherein the piston subassembly includes six pistons, single pistons centrally positioned on opposite ends of the slide body having a outer diameter larger than the outer diameter of pistons above and below the centrally positioned pistons.

47. An internal combustion engine including an electrical generator, the generator comprising a flywheel, the flywheel having a number of magnets attached thereto to increase the inertia of the flywheel and a plurality of electrical conductors located on

the nonferromagnetic engine housing, rotation of the flywheel relative to the electrical conductors generating an electrical current in the electrical conductors.

48. The internal combustion engine of claim 47 wherein the flywheel is located within a nonferromagnetic engine housing and the electrical conductors are located on the exterior of the nonferromagnetic engine housing.

49 An internal combustion engine comprising a linearly reciprocating slide body including at least one piston imparting rotation to a rotary member including a first electromagnetic field component, the engine also including a second stationary electromagnetic field component so that electrical energy can be generated by relative rotation of the first electromagnetic field component relative to the second electromagnetic field component, wherein the first electromagnetic field component is coupled to a drive shaft so that the first and second electromagnetic field components can also function as an electric motor.